## WHAT IS CLAIMED IS:

1. A method for dynamically allocating Internet Protocol addresses for a wireless cell, comprising:

determining a total Internet Protocol address pool for the wireless cell;

partitioning the Internet Protocol address pool into groups off address spaces for use with an associated user group within the wireless cell;

monitoring IP address demands associated with the wireless cell;

distinguishing between time sensitive IP address demands and time insensitive IP address demands; and

updating the groups of address spaces using an IP server.

2. The method of claim 1, wherein said step of determining a total Internet Protocol address pool, comprises the step of:

performing a predictive analysis to allocate Internet Protocol address space for the associated user group within the wireless cell.

3. The method of claim 2, wherein said predictive analysis is performed using a moving weighted mean average.

4. The method of claim 3, wherein said moving weighted average comprises the steps of:

recording an average number of requests from hosts in each user group; and

computing an average number of total IP addresses over a suitable fixed period of time.

5. The method of claim 4, wherein the suitable fixed period of, time is approximately 10 minutes.

6. The method of claim 2, wherein the user group is one of a wireless handoff terminal, a resident terminal and a wired terminal.

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7. The method of claim 1, wherein said step of determining a total IP address pool includes the further step of utilizing at least one of:

real-time data including present network IP address demands associated with the wireless cell;

non-real-time data including previous IP address demands associated with the wireless cell;

call blocking parameters;

quality of service and performance parameters; and

third party data including third party ISP address allocation specifications, quality of service parameters or performance parameters.

8. The method of claim 1, further comprising the step of:

assigning a priority level to a mobile host requesting an IP address associated with each wireless cell;

wherein the priority level is set at a first level in the case of a handoff mobile host and at a second level in the case of a resident mobile host, and the first priority level is greater than the second priority level

9. The method of claim 1, further comprising the step of:

classifying user groups within the cell into handoff hosts and dormant hosts.

10. The method of claim 1, wherein said determining step comprises the step of:

checking an option field within a DHCP request message.

11. The method of claim 10, further comprising the step of:

forwarding an IP address to a time sensitive host from a local time sensitive address pool in a wireless address agent, if the option field contains a predetermined byte-code.

12. The method of claim 11, wherein the predetermined byte-code represents a decimal number in a range of 128 to 254.

13. The method of claim 10, wherein the option field is in a private option space in the DHCP message.

14. The method of claim 13, wherein the option field is a byte-code.

15. The method of claim 14, wherein the byte-code represents a decimal number in a range
5    of 128 to 254.

16. The method of claim 2, further comprising the step of:

    establishing guard bands for the device categories to ensure a minimum
number of Internet protocol addresses are available for the device categories based on
10    the predictive analysis.

17. A method for dynamically allocating Internet Protocol addresses for a wireless cell,
comprising:

    performing a predictive analysis to allocate Internet Protocol address space for
15    an associated user group within the cell;

    partitioning the Internet Protocol address space into groups off address spaces
for use with an associated user group based on the predictive analysis;

    distinguishing between time sensitive IP address demands and time insensitive
IP address demands;

20    updating the Internet Protocol address space via an IP address server; and

    establishing guard bands for the device categories to ensure a minimum
number of Internet protocol addresses are available for the device categories.

18. The method of claim 17, wherein said determining step comprises the steps of:
25    checking an option field within a DHCP request message.

19. The method of claim 18, further comprising the step of:

    forwarding an IP address to a time sensitive host from a local time sensitive address
pool in a wireless address agent, if the option field contains a predetermined byte-code.
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20. The method of claim 19, wherein the predetermined byte-code represents a decimal
number in a range of 128 to 254.

21. The method of claim 18, wherein the option field is in a private option space in the DHCP message.

22. The method of claim 21, wherein the option field is a byte-code.

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23. The method of claim 22, wherein the byte-code represents a decimal number in a range of 128 to 254.

24. The method of claim 17, wherein the device categories comprises at least one of wireless

10    devices during handoff, resident wireless devices and wired devices.

25. The method of claim 17, further comprising the step of:
    adjusting the guard bands based on the predictive analysis.

15    26. The method of claim 25, wherein said predictive analysis is performed using a moving weighted mean average.

27. The method of claim 26, wherein said moving weighted average comprises the steps of:

20        recording an average number of requests from hosts in each user group; and
        computing an average number of total IP addresses over a suitable fixed
    period of time.

28. The method of claim 27, wherein said suitable fixed period of time is approximately 10

25    minutes.

29. A system for dynamically allocating Internet Protocol addresses for a wireless cell, comprising:
        an IP address server which determines a total Internet Protocol address pool
30        for a wireless cell and a partitioned address pool of groups off address spaces for use
        with an associated user group within the cell; and
        a wireless IP address agent residing in a wireless network;

wherein the wireless IP address agent handles requests for IP addresses from at least one of time sensitive and time insensitive wireless terminals, categorizes the wireless terminals as one of a time sensitive handoff host or a time sensitive resident host and a time in-sensitive handoff host or a time in-sensitive resident host, and forwards the IP address associated with the time sensitive handoff host or the time sensitive resident host to time sensitive terminals from a time sensitive address pool in the wireless IP address agent, and forwards the IP address associated with the time in-sensitive handoff host or the time insensitive resident host to the IP address server; and

wherein the server monitors IP address demands associated with the wireless cell, and updates the groups off address spaces based on the IP address demands.

30. A system for dynamically allocating Internet Protocol addresses for a plurality of wireless cells, comprising:

an IP address server which determines a total Internet Protocol address pool for each of a plurality of wireless cells and for each of a plurality of partitioned address pools of groups off address spaces for use with an associated user group within the cells; and

a plurality of wireless IP address agents residing in a wireless network;

wherein each of the wireless IP address agents handle requests for IP addresses from a plurality of time sensitive wireless terminals and time insensitive wireless terminals, categorizes each wireless terminal as one of a time sensitive handoff host or a time sensitive resident host and a time in-sensitive handoff host or a time in-sensitive resident host, and forwards the IP address associated with the time sensitive handoff host or the time sensitive resident host to time sensitive terminals from a time sensitive address pool in the wireless IP address agent, and forwards the IP address associated with the time in-sensitive handoff host or time insensitive resident host to the IP address server; and

wherein the plurality of servers monitor IP address demands associated with each of the plurality of wireless cells, and update the groups off address spaces based on the IP address demands.